

The Science of Farming



Answers by the Veterinarian

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Gapes in Chickens

Will you kindly tell me what causes gapes in young chickens, also in young turkeys, and if there is any way to prevent or cure them? I have seventy chickens 3 weeks old, some of which have the gapes, and I am afraid all will soon be affected.—A. N. Graham, Dexterville, Iowa.

Reply.—This disease is due to a parasite work in the windpipe (trachea). The worm is known as "syngamus trachealis." The gapping is the characteristic symptom in affected fowl. The young birds become affected by taking in either adult worms containing eggs or the embryos which may be present in food or drink. Treatment consists in first separating all affected birds from the flock and then putting the balance onto new ground away from infected yards. The latter and all houses and pens should be cleaned up, disinfected and whitewashed. Include feeding and watering troughs. Burn dead birds. As a disinfectant use a 5 per cent solution of coal tar dip or crude carbolic acid and continue its use in the houses, etc., right along until the disease is got rid of. Some poultrymen are expert in treating the disease. They strip a feather of its web except that portion near the tip. This feather is dipped in kerosene or turpentine and used as follows: Open the chicken's mouth with the fingers of the left hand; thrust the feather into the windpipe when that passage opens for the chicken to breathe; withdraw the feather around several times and withdraw it quickly; it will have worms adhering to it, or they will afterward be coughed up, having been loosened by the action of the feather. The operation must be very carefully and gently done. Burn all matter that comes away or is coughed up. Affected fowl should be plucked and cropped. Giving chickens new ground regularly and avoiding crowding and dirt tend to prevent this disease.

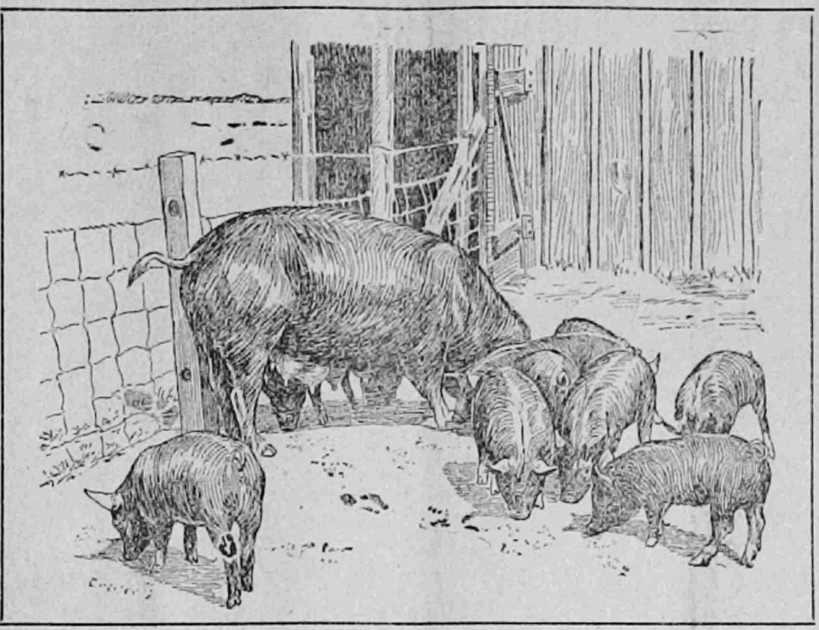
Castrating a Colt

We have a 2-year-old colt that was by a grade stallion and from a mare that we bought in one of the large cities when her foot had played out for work. He is a good, big colt, but does not seem to have much life. He does not pay much attention to mares, and maybe it is worms that are bothering him, as his coat is rough. We want to keep him for a stud, but if he does not take more notice he may have to be castrated. Please tell us what is the best time to alter a colt.—J. V. Kansas.

Reply.—The best time to castrate such a colt is when the knife is good and sharp. Do it as soon as possible, for colts of that breeding are a damage to the district on which they are inflicted as sires. No man should think of standing for public service a grade, mongrel or scrub stallion. The castrating knife should be kept busy just as soon as each district can substitute purebred stallions for such mongrels which cannot possibly advance the horse industry of the community. The operation should be performed on any bright, dry day.

HOGS ON EAR CORN

Result of Experiments Conducted by Professors W. J. Kennedy and E. T. Robbins, at Iowa State College Agriculture Experiment Station



Do Two Litters a Year Pay?

It is the opinion of practical farmers that it is profitable to raise two litters of pigs a year when suitable, warm quarters can be provided. Some say much depends upon whether or not there is plenty of fresh milk on the farm for feeding purposes.

Hogs fed on pasture the saving was 7.4 per cent, and for old thin sows fed in dry yards the saving was 6.8 per cent of the corn by shelling it and soaking it twelve hours.

The small savings of corn by grinding are insignificant because in every case where there was any saving by grinding a still greater saving was effected by simply soaking the shelled corn twelve hours in water. Hogs changed from soaked corn or cornmeal

to dry ear corn for even a few days fell quickly behind in gains, so that any advantage from prepared corn might thus be easily lost.

In general the fastest and most economical gains are secured by feeding dry ear corn until the hogs are close to 200 pounds in weight. For hogs above 200 pounds in weight, soaked shelled corn, while a trifle slower in rate of gain than soaked cornmeal,

made the most economical gains of all the forms in which corn was fed.

Professor W. J. Kennedy and E. T. Robbins, after weighing the results of the experiment carefully in mind, make the following conclusions:

1. Hogs under 200 pounds in weight make the most economical gains when their corn is fed in the form of dry ear corn, although shelled corn soaked in water twelve hours makes slightly faster gains.

2. Hogs over 200 pounds in weight make more economical gains on shelled corn soaked in water twelve hours than on dry ear corn or cornmeal in any form, and at the same time the gains on soaked shelled corn are nearly as rapid as on any of the other forms in which corn was fed. The amount of corn saved by shelling and soaking for hogs of this size varies from 4.1 per cent to 7.4 per cent for different lots, being the highest for hogs on pasture.

3. Hogs fed on dry ear corn require a longer time to eat than those fed soaked corn or cornmeal, owing to the more thorough mastication of the dry ear corn. Young hogs and pigs reduce the dry kernels from the ear corn to a finer state of division than do the older hogs.

4. Shelled corn soaked twelve hours is more palatable and produces faster and more economical gains than shelled corn soaked twenty-four hours.

5. With hogs over 200 pounds in weight the soaking of corn is of greater advantage to those running on pasture than to those confined in dry yards.

6. It is useless to grind corn for hogs of any age when the weather is warm enough to permit soaking. In every case where grinding shows a saving of corn, simple soaking twelve hours in water shows a still greater saving.

7. Soaking cornmeal adds nothing to its feeding value for hogs that relish dry cornmeal sufficiently to eat it readily in that condition. Young pigs do not relish dry cornmeal so well as do older hogs.

8. Hogs of all ages relish soaked cornmeal and usually eat larger quantities of it than of corn in any other form. While the gains on this ration are among the best for young hogs and as a rule better than with any other form of corn for hogs over 200 pounds in weight, these gains are also among the most expensive produced by any form of corn fed in these experiments.

9. Hogs ranging upward from 200 pounds in weight eat dry cornmeal readily. They make more rapid gains on it and a little more pork from each bushel of corn than on dry ear corn, but after paying 3 cents per bushel for shelling and grinding the gains are more expensive with dry cornmeal than with dry ear corn except for the oldest hogs with corn above 40 cents per bushel in price.

10. In general, hogs that are accustomed to corn prepared in some form receive at least a temporary check in rate and economy of gains when for any reason a change is made to dry ear corn. When the gains are very rapid on the soaked or ground corn this effect is more marked and in some cases offset any beneficial effect of the preparation of the corn.

"RAISE MORE" IS CRY

"THE United States as a whole has a fertile soil and as favorable climate as any country in the world," says W. C. Brown, president of the New York Central lines.

"Given the same intelligent methods of seed selection, fertilization and cultivation," continues Mr. Brown, "our lands will produce as large crops as those of any other nation."

A simple comparison of the average annual yield per acre of the principal cereals of the country with those of the older nations is the severest possible criticism of our methods, or our want of method.

Mr. Brown, who spent his boyhood upon the western frontier as a farmer, points out that during the last ten years wheat in this country has averaged only fourteen bushels per acre, while England averages thirty-two bushels, Germany twenty-eight bushels, Netherlands thirty-four bushels and France twenty bushels.

Of oats this country averages 23.7 bushels, England 42, Germany 46 and Netherlands 53 bushels. Potatoes in the United States average 35 bushels, while Germany, Belgium and Great Britain produce average yields of 250 bushels.

NOTES ON SOILS, FEEDING, ETC.

Alfalfa Needs Food

IT IS important to know that there is little difference between successful alfalfa growing and the successful growing of other crops. Poor farming never brings big crops, nor will poor land produce as big yields as the more fertile. Failure to restore to the soil the necessary elements of which it has been robbed means the same in New York, Kansas, Virginia or anywhere else. Every farm plant, to prosper, must find in the soil, readily available, the elements needed for its development. If a farmer finds the soil lacking in elements needed for certain crops he should either supply the deficiency or not attempt their raising. This is true of corn or wheat, cotton or tobacco, no less than alfalfa.



HE IS PICTURED WRONG. Owls are often blamed unjustly for killing chickens. The fact is, the owl, as well as most other birds, are valuable to the farmer for killing mice, rats and insects, which destroy millions of dollars' worth of farm produce yearly.

Air Puts Life in Soils

OUR best farmers are mindful of the fact that the soil should be so cultivated that it will admit of some circulation of air. It is a well-known fact that there is not a red which will germinate, even in the richest soil, unless a little air is present. A very important feature of good farming is to determine just how much air the soil should contain or how loose or compact it should be. Having too much air in the soil is as bad as having none at all, and it takes more than ordinary judgment on the part of the farmer to determine when the soil needs aerating or when it is aired out too much. Air in the soil performs two very important functions—it liberates plant food and it is by the action of the air that decomposition and disintegration are hastened. Without the air plant food would not become liberated, and the weeds and stubble that are turned under would not begin to immediately decompose to make plant food and humus. It is the air that causes nitrification of the soil. The soil contains large amounts of plant food of which but a small proportion is available. It is the circulation of air through this soil that causes this nitrogen to be liberated. Without air the soil becomes dead and inert.

Value of Fertilizers

TO CALCULATE the value of fertilizers, multiply the percentage of nitrogen by 2.5; multiply the percentage of available phosphoric acid by 0.7; multiply the percentage of insoluble phosphoric acid (total minus available) by 0.4; multiply the percentage of potash by 1.0. The sum of these four products will be the commercial valuation per ton on the basis taken.

For illustration: A table of analyses shows a certain fertilizer to have the following composition: Nitrogen, 2.52 per cent; available phosphoric acid, 6.31 per cent; insoluble phosphoric acid, 3.8 per cent; potash, 6.64 per cent. According to this method of valuation the computation would be as follows:

Nitrogen	2.52x2.5	\$9.58
Available phosphoric acid	6.31x0.7	4.42
Insoluble phosphoric acid	3.8x0.4	0.35
Potash	6.64x1.0	6.64
Total		\$21.00

This rule assumes all the nitrogen to be organic and all the potash to be in the form of sulphate. If a considerable portion of nitrogen exists in the fertilizer as nitrate of soda or as sulphate of ammonia, and potash

ash is present as muriate, the results are somewhat less.

Farmers should be warned against judging fertilizers by their valuations. A fertilizer the cost of which comes chiefly from the phosphoric acid present, would value much lower commercially than a fertilizer with a high percentage of nitrogen, and yet the former might be the more profitable one for a given farmer to purchase.

About Wheat, Bran and Rye

"CAN you give me some information on this question: At the same price, which is the more nutritious feed for hogs and poultry, wheat bran or crushed rye? Also, which are the best root crops for feeding purposes to grow in sand along the river bank?"

I give below the digestible nutrients in average samples of wheat bran and rye. By studying these figures you will note that there is considerable difference in the composition of the two feeds, especially in reference to the protein and carbohydrates. As to which would be better to use would depend upon the age of the animal and whether the purpose of feeding is to fatten or to grow them. You will note that bran has considerably more protein than the rye, while rye is better for fattening purposes. On the other hand wheat bran, where it comprises any large

part of the ration of hogs, is too bulky. I should say that rye should always be ground for feeding purposes. As to the root crops, I have had the best success with stock beets or mangel wurzels.

Composition of wheat bran (winter wheat) and rye, respectively: Dry matter in 100 pounds, 87.7 and 88.4; digestible nutrients in 100 pounds, protein 12.3 and 9.9; carbohydrates 37.1 and 67.6; ether extracts, 2.6 and 1.1.

Profitable Feeding

IN FEEDING cattle we always crush or husk the corn and cobmeal with bran or ground oats. The most of our corn is husked by machinery and the fodder shredded and fed in closed mangers. The refuse is used to keep the cattle well bedded and to absorb all the liquid manure, which we apply to the corn and oat fields. The most helpful single thing in our experience is pasture. It is in the long run the cheapest and best ration. Followed along the lines I have indicated as being our own experience, I am confident that farmers can grow good cattle at a profit. By so doing, if the manure is carefully made and saved, in ten years the value of the land will be enhanced 50 per cent, making this way the cheapest of all ways to get two blades of grass where one grew before.

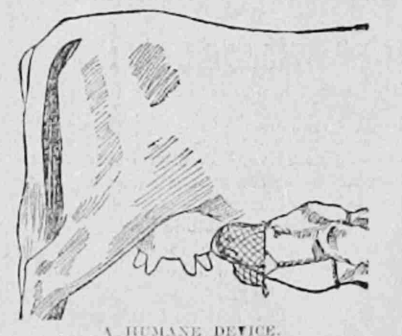
Why Boys Leave the Farm

PERHAPS the one thing more than any other that drives the young people away from the farm is that "the head of the house" is more interested in the work of the farm than he is in the society of his fellows, while the opposite is quite often true of the young people. No doubt many of the young people of to-day will expect their children to do exactly what they are rebelling against, but there seems to be a general awakening along this line.

THE man who is spending money for excavation, tile, laying and filling, should stand the expense of having a competent surveyor to lay out the grade for him, provided, of course, he is not sufficiently skilled in the use of instruments to do it for himself. Any failure to lay the property means the taking up of that portion some time in the future, and that after considerable damage has been done to the entire system above the point of failure. We have known of a good deal of money being lost by the neglect of this simple precaution. Farmers think the eye is a sufficient guide, and the eyes of some men are wonderfully accurate, but no man should take chances.

Removing Pigs from Sows

IT IS NOT a good plan to take all the piglets from the sow unless one or two of them can be turned with her some hours after the milk she will have at that time, and again, say, after a lapse of twenty-four hours. The preferred way is to leave about two or three of the smallest with her for several days, and after that leave only one for two or three days more, by which time the flow of milk will have gradually diminished that no injury will result to the sow by keeping them entirely away from her. This extra supply of milk helps also to push the smaller pigs along in growth and put them more nearly on an equality in size with their thriffter mates.



A HUMANE DEVICE. Weaning calves is not an easy matter when the cow has formed the habit of withholding her milk unless the calf is present. Under these conditions the above arrangement is handy and causes no harm to either the calf or its mother.

Test Easy to Supply

THIS test for tuberculosis in cattle is such a simple, easy test to apply that it would seem that most any one would be able to apply it with perfect results, and when it is applied as it should be the results are absolutely reliable. In getting the herd ready to test it is wise to water them about noon and house them. Permit them to stand about three hours at 2 o'clock you can take the temperatures. The normal temperature varies from 99 to 103 degrees. No animal with a temperature higher than 103 should have tuberculosis injected. You take three temperatures, the first being taken at 3 o'clock, then one at 5 and another at 7. After the 7 o'clock temperature you inject tuberculin by the use of a syringe, using 2 c.c. of tuberculin for the ordinary 1,000-pound cow. After the tuberculin is injected, the herd should be watered, and they should not be watered again until 2 o'clock the following day unless they can drink whenever they want to. The following morning at 6 o'clock you take temperatures, then again at 8, 10, 12 and 2, at which time the test is finished. After the test is finished if there is an abnormal rise of temperature over the temperatures of the first day your herd should be divided into three classes—healthy, suspicious and condemned. A cow whose temperature rises over 103 or 104 may be considered suspicious. Over 104, up to 107.2, are usually reactors and tuberculous.

Making Stalks Assist Corn to Nourish Live Stock

By N. A. Clapp

OUR annual crop represents a market value, as grain, of about \$1,300,000,000. If the corn stalks could all be saved at their best, they would represent an added value to the corn crop of about \$400,000,000. These look like large sums of money, but the amounts are not exaggerated.

Considering the great value of the corn crop of the country, we can see why great efforts are being made to secure the crop at its best, and retain it in a condition to insure its full value as feed. The waste in the past have been largely with the fodder.

The value of the corn fodder is not appreciated alike in all parts of the country. Some deem it advisable to hog down the corn, not making any effort to save the stalks for feed. In other places the corn is husked on the hill, and afterwards the cattle are turned in to consume the stalks, getting only their partial value as feed, as the stalks have materially injured them. Others cut and shock the corn and feed it stalks and all, letting hogs follow the cattle to pick up the unhusked kernels of grain that may be found in the droppings. In the northern portions of the country, where both the grain and the stalks are esteemed highly for feed, the corn is cut, shocked and husked by hand, the grain stored to be fed in accurately measured quantities and the stalks stored to be fed as needed through the winter.

Of late years different plans have been devised by which the corn crop can be se-

cured entirely, storing it for use in a manner that is convenient to feed at any time and can be measured out accurately by the feeder. One of the popular plans is to store it in the silo.

When corn is put in the silo it is cut just at the time when the kernels on most of the ears are glazing well and the stalks are still full of juice and in a condition to yield up all the nutrients in them. Running the corn through a cutting box before it is elevated and dropped into the silo, it is in short pieces that can be packed very closely, excluding all the air. Of course the whole mass goes through a process of fermentation, yet it is succulent and palatable. It can be measured or weighed out and only such amounts as each of the animals require given them.

Silage is considered the most economical feed for dairy cows and other cattle is raised and stored on the farm. It is all consumed—grain, stalks, butts and leaves are all consumed. By the plan of cutting corn, shocking it and husking it in the field, exposing the fodder to the winds and storm after the corn is taken out of the stalks, it is generally estimated that the feeding value of the stalks is injured fully 40 per cent.

One of the objections urged against ensiling corn is the fact that the whole crop, grain, stalks and all, is run into the silo, not leaving the grain in a condition where

it can be utilized to its fullest extent. That the silage represents a feeding value not fully up to what it would be if it could be saved in its green state before being fermented is readily admitted. To remedy some of the difficulties encountered when the corn is ensiled another scheme has been devised; that of shredding and husking.

By the method of shredding and husking the corn is cut when ripe, set up in shocks and allowed to cure or dry out until it is considered safe to pile the shredded fodder in the barn or stack. By this plan the grain is separated from the stalks and stored in the silo, while the stalks and leaves are cut into strips and blown by the machine to the mow or stack, where they can be packed in a small compass ready to feed when needed, and in a fresh, sweet condition.

Among the advantages urged by those who shred the corn I will mention the following:

The stalks can be stored in a small compass and can be fed in just such quantities as each animal will require, and can be given to them in the manger, a practice not satisfactory when whole and in the bundle. What is not eaten of the stalks is in fine shape for bedding the stock, and is in the absorbent of the liquid manure yet discovered. It is clean and free from dust, the stock will eat considerably more of the

stalks after they have been shredded than it can be induced to do while they are whole, thereby making the shredded stalks a more economical feed than the whole stalks.

Where diversified farming is carried on, and there are other kinds of work than husking that must be done, this work can be deferred until such times as it can be done without interfering with other work on the farm. When the corn is husked by the machine a large amount can be handled in a short period of time, making a short job of the corn husking, while by the old plan of husking by hand and tying the stalks in the field, there is more or less suffering from stormy weather and cold hands and feet. When corn is allowed to ripen and cure in the shock the grain can be sorted and stored without being exposed to storms or being mixed with grit by being thrown on the ground before sorting and storing.

In order to make a success of shredding and storing corn fodder it must first be allowed to cure before it is shredded, or when piled up in large quantities it will heat and be injured. It must also be dry, or it will heat and mold and some of it will spoil. Good common sense must be used in this matter. If, for any reason, it is thought best to shred the corn when it is damp, the fodder can be saved by placing a layer of stalks alternately with a layer of dry straw. The straw will absorb some of the juices from the stalks and the aroma, too, making the whole mass so palatable that it will all be consumed.